006001-000962.JHA.300050 WEMMH/SB/08A (4/03)
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Substitute for form 1449A/PTO

Sheet

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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of

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	Complete if Known
Application Number	10/633,439
Filing Date	August 1, 2003
First Named Inventor	Donald J. Frasier et al.
Group Art Unit	1725
Examiner Name	
Attornev Docket Number	6001-962

	U.S. PATENT DOCUMENTS									
Examiner Initials			Publication Date MM-DD-YYYY	Name of Patentee or Application of Cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear					
		US-833,150	10-16-1906	Attenhoper						
		US-1,983,580	12-11-1934	Nock, Jr.						
		US-3,099,053	07-30-1963	Eliot						
		US-3,530,927	09-29-1970	Lejeune						
		US-3,532,154	10-06-1970	Balevski et al.	·					
		US-3,608,621	09-28-1971	Bollig et al.						
		US-3,763,926	10-09-1973	Tschinkel et al.						
		US-3,788,382	01-29-1974	Daniel et al.						
		US-4,061,176	12-06-1977	Carbonnel						
	_	US-4,066,117	01-23-1978	Clark et al.						
		US-4,114,675	09-19-1978	Buhrer						
		US-4,121,651	10-24-1978	Zeppellini						
		US-4,179,045	12-18-1979	Colombani						
		US-4,385,751	05-31-1983	Saether et al.						
		US-4,479,594	10-30-1984	Altland						
		US-4,590,988	05-27-1986	Fukuoka et al.						
		US-4,615,376	10-07-1986	Mori et al.						
		US-4,668,288	05-26-1987	Ouchi et al.						
		US-4,714,104	12-22-1987	Ouchi et al.						
		US-4,909,422	03-20-1990	Muller						
		US-5,048,591	09-17-1991	Oti et al.						
JI		US-5,111,870	05-12-1992	Cook						
\mathbb{V}		US-5,190,674	03-02-1993	Monks	•					
V		US-5,244,031	09-14-1993	Cook et al.						

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	FORMATION			Filing Date	August 1, 2003			
ST	ATEMENT B	Y API	PLICANT	First Named Inventor	Donald J. Frasier et al.			
				Group Art Unit	1725			
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Sheet	2	of	3	Attornev Docket Number	6001-962			

U.S. PATENT DOCUMENTS									
Examiner Cit Initials No.		Document Number Number-Kind Code ³ (If known)	Publication Date MM-DD-YYYY	Name of Patentee or Application of Cited Document	Pages, Columns, Lines when Relevant Passages or Relevant Figures Appear				
4		US-5,291,937	03-08-1994	Corderman et al.					
		US-5,295,530	03-22-1994	O'Connor					
		US-5,309,976	05-10-1994	Prichard et al.					
		US-5,335,711	08-09-1994	Paine					
		US-5,346,184	09-13-1994	Ghosh					
		US-5,404,930	04-11-1995	Stanton et al.					
		US-5,484,008	01-16-1996	Thompson	7				
		US-5,509,458	04-23-1996	Onuma et al.					
		US-5,515,906	05-14-1996	Thomson et al.					
		US-5,551,502	09-03-1996	Matsubayashi et al.					
		US-5,592,984	01-14-1997	Schmiedeknecht et al.					
		US-5,744,050	04-28-1998	Shaw					
		US-5,860,468	01-19-1999	Cook					
		US-5,894,880	04-20-1999	Hohenbichler					
W		US-5,913,358	06-22-1999	Chadwick					
1		US-5,988,257	11-23-1999	Hugo					
マ		US-6,103,182	08-15-2000	Campbell					

Examiner		Foreign Patent Document	Publication Date	Name of Patentee or	Pages, Columns, Lines, Where	70
initials*	No.¹	Country Code ³ -Number ⁴ -Kind Code ⁸ (if known)	MM-DD-YYYY	Application of Cited Document	Relevant Passages or Relevant Figures Appear	Ľ
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006001-000962.JHA.300056 WEMMH/SB/08B (4/03)
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Substitute for form 1449B/PTO				Application Number	10/633,439		
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				Group Art Unit	1725		
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Sheet 1	3	ı of ı	3	Attorney Docket Number	6001-962		

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS								
Examiner Initials*	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s) publisher city and/or country where published	T²					
U		Horton, Robert A., "Investment Casting", PCC Airfoils, Inc., pp. 253-269.						
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Sheet

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	Complete if Known
Application Number	10/633,439
Filing Date	August 1, 2003
First Named Inventor	Donald J. Frasier et al.
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Examiner Name	
Attornev Docket Number	6001-962

U.S. PATENT DOCUMENTS								
Examiner Cite No.1		Document Number Number-Kind Code ² (if known)	Publication Date MM-DD-YYYY	. Name of Patentee or Application of Cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear			
6		US-1,956,524	04-24-1934	Byram				
_ 1_		US-2,985,929	05-30-1961	Carter				
		US-3,532,155	10-06-1970	Kane et al.				
		US-3,841,384	10-15-1974	Tingquist et al.				
		US-3,861,457	BI Py					
		US-3,888,300	06-10-1975	Guichard et al.				
		US-4,200,138	04-29-1980	Hildebrandt				
17		US-4,469,161	09-04-1984	Higgenbotham et al.				
\ //		US-4,813,470	03-21-1989	Chiang				
V		US-5,062,468	11-05-1991	Monte et al.				
/		US-5,062,469	11-05-1991	Monte et al.				
K		US-5,607,007	03-04-1997	Chandley				
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Examiner Initials*	Cite	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Application of Cited	Pages, Columns, Lines, Where Relevant Passages or Relevant	T ⁴
	No.'	Country Code ³ -Number ⁴ -Kind Code ⁶ (if known)		Document	Figures Appear	\perp
		EP 0100272	07-13-1983			
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Examiner Signature	Date Considered	4/8/05

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Substitute for form 1449B/PTO				Complete if Known		
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STATEMENT BY APPLICANT			ICANT	First Named Inventor	Donald J. Frasier et al.	
(use as many sheets as necessary)				Group Art Unit	1725	
				Examiner Name		
Sheet	2	of	2	Attorney Docket Number	6001-962	
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kaminer Cit nitials* No	ie,	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s) publisher city and/or country where published						
A.		Article entitled, "Heat is Power," Frank Colucci						
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